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CLAIMS

1. A cooling apparatus boiling and condensing refrigerant comprising;

5 a refrigerant container which has a heat-generating member attached to a bottom surface thereof and which reserves therein refrigerant which can be boiled by receiving heat from said heat-generating member,

10 a heat radiating portion having a plurality of tubes, which are connected to the inside of the refrigerant container and are provided substantially upright on an upper surface of said refrigerant container, and a header tank by which the plural tubes are communicated;

15 wherein the refrigerant reserved in said refrigerant container can be boiled and evaporated by receiving heat from said heat-generating member and can be used to cool the heat-generating member by radiating latent heat of the refrigerant vapor from said heat
20 radiating portion; and

wherein assuming that a portion of the upper surface of the refrigerant container on which a mounting portion of the heat-generating member is projected is referred to a boiling area, at least a tube
25 of the plurality of tubes located within said boiling area has a passage defined by a lower end opening portion connected to the refrigerant container and has a cross sectional area of the passage larger than that of the tube located outside the boiling area.

30 2. A cooling apparatus boiling and condensing refrigerant, according to Claim 1, wherein the at least a tube located within the boiling area has a shape in which, the lower end portion thereof is suddenly increased in its passage cross section towards the lower
35 end opening portion.

3. A cooling apparatus boiling and condensing refrigerant, according to Claim 1, wherein the at least a

tube located within said boiling area has a passage cross section larger than that of the tubes located outside said boiling area, over the entirety of the length from the lower end opening portion to be connected to said refrigerant container, to an upper end opening portion to be connected to said header tank.

4. A cooling apparatus boiling and condensing refrigerant comprising;

a refrigerant container which has a heat-generating member attached to a bottom surface thereof and which reserves therein refrigerant which can be boiled by receiving heat from said heat-generating member,

a heat radiating portion having a plurality of tubes, which are connected to the inside of the refrigerant container and are provided substantially upright on an upper surface of said refrigerant container, and a header tank by which the plural tubes are communicated;

wherein the refrigerant reserved in said refrigerant container can be boiled and evaporated by receiving heat from said heat-generating member and can be used to cool the heat-generating member by radiating latent heat of the refrigerant vapor from said heat radiating portion; and

wherein assuming that a portion of the upper surface of the refrigerant container on which a mounting portion of the heat-generating member is projected is referred to as a boiling area, the plurality of tubes being comprised of a first tube group located within said boiling area and a second tube group located out of the boiling area, the adjacent tubes of the first tube group are spaced at a distance smaller than a distance between adjacent tubes of the second tube group.

5. A cooling apparatus boiling and condensing refrigerant, according to Claim 1, wherein

said refrigerant container is comprised of

a plurality of intermediate plates having an opening portion extending through the thickness thereof,

a heat receiving plate which is provided on its surface with the heat-generating member, and

5 a heat radiating plate which is provided on its surface with the tubes;

wherein the refrigerant container is constituted by superimposing the plural intermediate plates between said heat receiving plate and said heat
10 radiating plate; and

wherein the opening portion of the intermediate plate adjacent to said heat radiating plate is made large corresponding to said boiling area projected on said heat radiating plate.

15 6. A cooling apparatus boiling and condensing refrigerant, according to Claim 4, wherein

said refrigerant container is comprised of a plurality of intermediate plates having an opening portion extending through the thickness thereof,

20 a heat receiving plate which is provided on its surface with the heat-generating member, and

a heat radiating plate which is provided on its surface with the tubes;

wherein the refrigerant container is constituted by superimposing the plural intermediate plates between said heat receiving plate and said heat
25 radiating plate; and

wherein the opening portion of the intermediate plate adjacent to said heat radiating plate is made large corresponding to said boiling area
30 projected on said heat radiating plate.